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**Notice of Allowability**

Application No.

10/802,188

Examiner

Ishwar (I. B.) Patel

Applicant(s)

ORUI ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on October 17, 2005 and interview summary.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                              |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>1205</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                                      |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                     |
|   | 9. <input type="checkbox"/> Other _____.   |

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David R. Metzger (Reg. 32,919) on December 15, 2005.

The application has been amended as follows:

Claim 1: (Currently Amended) A junction structure for conductive projection, comprising:

- a first insulating layer;
- a conductor portion formed on a surface of the first insulating layer;
- a conductive projection joined to a top surface of the conductor portion;
- a second insulating layer formed on the surface of the first insulating layer such that the second insulating layer surrounds the conductor portion and is in contact with the sides of the conductor portion, but does not contact the top surface of the conductor portion, the second insulating layer having a top surface that is formed at approximately the same level as the top surface of the conductor portion; and
- a resin material extending from the conductive projection to another conductive projection, a portion of the resin material surrounding a root portion of the conductive

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projection in a ring form, the resin material being of a different material than the second insulating material.

Claim 6: (Currently amended) A junction method for conductive projection, comprising the steps of:

forming a first insulating layer;

forming a conductor portion on a surface of the first insulating layer;

forming a second insulating layer on the surface of the first insulating layer such that the second insulating layer surrounds the conductor portion and is in contact with the sides of the conductor portion, but does not contact the top surface of the conductor portion, the second insulating layer having a top surface that is formed approximately the same level as the top surface of the conductor portion; and

~~forming a conductor portion on an insulating layer in such a way that the surface of said conductor portion is formed at the same level as that of the surface of said insulating layer;~~

supplying a resin material in an uncured state onto at least a junction plane of said conductor portion to which a conductive projection is joined, said resin material in an uncured state being supplied onto the entire surfaces of both of said conductor portion and said insulating layer;

curing said supplied resin except for a portion of said resin on said junction plane;

disposing said conductive projection on said junction plane, ~~which~~ on which said resin material remains uncured ~~has said resin material supplied thereon;~~ and

heating said resin material and said conductive projection to join said conductive projection to said conductor portion while curing said previously uncured resin material so as that a root portion of said conductive projection is surrounded by said resin material in a ring form.

Claim 7: Cancel.

2. The following is an examiner's statement of reasons for allowance:

The patentability resides in the structure forming a ring portion surrounding a root portion of the conductive projection by the same resin material which extends from the conductive projection to another conductive projection, wherein the conductive projection is formed on a conductive portion formed on a surface of a first insulating layer with the second insulating layer surrounding and in contact with the conduction portion, in combination with other claimed limitations of the base claim 1. The structure as claimed has not been disclosed or suggested by prior art of record.

The closest prior arts of record as described below do not disclose the structure as claimed and there is no motivation to modify them.

Tanaka, US Patent No. 6,559,390, in figure 6, discloses a solder connect assembly with conductor portion (pad 7) formed on a first insulating layer (2), however,

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dose not recites the second insulating layer (8) in contact with the conductor portion or second insulating layer having a top surface at approximately the same level as the top surface of the conductor portion or the ring formed at the root portion of the conductive projection is of the same resin material, which extend from the conductive projection to another conductive projection.

Shoji, US Patent No. 5,869,904 discloses a device having a projecting electrode with a conductor portion (pad 13c) formed on first insulating layer (13a), however, does not recite the second insulating layer (13b) in contact with the conductor portion or second insulating layer having a top surface at approximately the same level as the top surface of the conductor portion. Rather, Shoji disclose the conductor portion (pad 13c) clear of the second insulating layer (13b) and further recites solder forming around the conductor portion (13c, figure 6C and 10).

O'Hara, US Patent No. 6,924,553, in figure 1D, discloses a conductive portion (pad 12) formed on first insulating layer, however does not recite the ring formed on the root portion of the conductive portion of a resin material which extend from the conductive projection to another conductive projection, or the second insulating layer (14) not formed on the top surface of the conductive portion or second insulating layer having a top surface at approximately the same level as the top surface of the conductor portion. Rather, Ohara disclose the second insulating layer covering the periphery of the conductive portion.

Chiu et al., US Patent No. 6,696,644, in figure 10, discloses a plastic package with conductive portion (pad 61) formed on first insulating layer, however does not recite

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the ring formed on the root portion of the conductive portion of a resin material which extend from the conductive projection to another conductive projection, or the second insulating layer (62) not formed on the top surface of the conductive portion or the second insulating layer having a top surface at approximately the same level as the top surface of the conductor portion. Rather Chiu et al., disclose the second insulating layer covering the periphery of the conductive portion.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Claim 1 directed to an allowable product. Pursuant to the procedures set forth in the Official Gazette notice dated March 26, 1996 (1184 O.G. 86), claim 6, directed to the process of making or using the patentable product, previously withdrawn from consideration as a result of a restriction requirement, is now subject to being rejoined. Claim 6 is hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Since all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, the restriction requirement made in the Office action mailed on July 1, 2005 is hereby withdrawn.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272 1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ishwar (I. B.) Patel  
Examiner  
Art Unit: 2841  
December 20, 2005